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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/749,876	12/29/2000	Hideo Itoh	201419US0X	6748

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EXAMINER

CHEVALIER, ALICIA ANN

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 09/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/749,876	<b>Applicant(s)</b> ITOH ET AL. <span style="float: right;">9</span>	
	<b>Examiner</b> Alicia Chevalier	<b>Art Unit</b> 1772	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 June 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 50-95 is/are pending in the application.
- 4a) Of the above claim(s) 57,59,60,63,64,72,75,78-84,86,87 and 89-94 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 55,58,70,73,85 and 88 is/are allowed.
- 6) ☒ Claim(s) 50,51,53,54,56,61,62 and 95 is/are rejected.
- 7) ☒ Claim(s) 52,65-69,71,76 and 77 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 1772

### **RESPONSE TO AMENDMENT**

1. Claims 50-95 are pending in the application, claims 57, 59, 60, 63, 64, 72, 75, 78-84, 86, 87 and 89-94 are withdrawn from consideration.
2. Amendments to the claims, filed on June 17, 2004, have been entered in the above-identified application.

### ***WITHDRAWN REJECTIONS***

3. The 35 U.S.C. §103 rejection of claims 50-54, 56, 61, 62, 65-69, 71, 76, 77 and 95 as over Tabata et al. (US Patent No. 5,407,738), made of record in office action mailed February 17, 2004, pages 6-9, paragraph #10 has been withdrawn due to Applicant's amendment in the response filed June 17, 2004.

### ***NEW REJECTIONS***

4. **The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.**

### ***Claim Rejections - 35 USC § 102***

5. Claims 50, 51, 53, 54, 56, 61 and 62 are rejected under 35 U.S.C. 102(b) as being anticipated by Deckman et al. (U.S. Patent No. 4,701,366) and evidenced by Gratzel (U.S. Patent No. 5,205,940) and *Hawley's Condensed Chemical Dictionary*.

Regarding Applicant's claim 50, Deckman discloses a member comprising a substrate (*col. 3, line 20*) and laminate deposited on the substrate, which laminate has a plurality of thin-film photocatalytic layers (*silicon dioxide layers, col. 10, lines 35-51 and col. 3, line 24*), each consisting of a photocatalytic material and a plurality of thin-film support layers (*silicon layers, col. 10, lines 35-51 and col. 3, line 24*). As shown is the background of Graetzel silicon dioxides are known to have a photocatalytic effect (*Graetzel col. 1, lines 23-26*), therefore silicon dioxide is deemed to be a photocatalytic material. Furthermore, since the member comprises a photocatalytic material is deemed to be a photocatalytic member. Also, the limitation "having photocatalytic and color forming properties" is deemed to be a latent property of the prior art since the prior art is substantially identical in composition and/or structure. MPEP 2145 (II).

The plurality of thin-film photocatalytic layers and the plurality of thin-film support layers alternate with each other and contact sequentially at surface areas, wherein each thin-film support layer has a smaller surface area that the surface area of the contacting thin-film photocatalytic layers, leaving space between adjacent photocatalytic layers and next to a support layer, the space being open to the outside of the member, the thin-film photocatalytic layer nearest the substrate being the lower most of the thin-film photocatalytic layers, the remaining layers being sequentially more distant from the substrate (*figure 1c*).

Regarding Applicant's claim 51, Graetzel discloses that the member further comprises an opening on a surface of the member and through a thin-film photocatalytic layer, and wherein a space communicates with the opening in order to be open to the outside of the member by way of the opening (*figure 1c*).

Regarding Applicant's claim 53, Graetzel discloses that the plurality of thin-film support layers are made of one member selected from the group consisting of metals, semiconductors and insulators, each with a melting point of 400 °C or higher, since the reference discloses that the thin film supports are made of silicon (*col. 10, lines 35-51 and col. 3, line 24*) which has a melting point of 1410 °C (*Hawley's Condensed Chemical Dictionary, page 996*).

Regarding Applicant's claim 54, Graetzel discloses that the openings are shaped like parallel grooves (*figure 1c*).

Regarding Applicant's claim 56, Graetzel discloses that the opening comprises a plurality of openings disposed at uniform intervals (*figure 1c*).

Regarding Applicant's claims 61 and 62, Graetzel discloses that the plurality of thin-film photocatalytic layers have surface areas becoming larger toward the lowermost thin-film photocatalytic layer (*figure 1c*).

### ***Claim Rejections - 35 USC § 103***

6. Claim 95 is rejected under 35 U.S.C. 103(a) as being unpatentable over Graetzel.

Regarding Applicant's claim 95, it would have been an obvious matter of design choice to change the thickness and spacing of the thin-film photocatalytic layers, since a modification would have involved a mere change in size and spacing of the photocatalytic layers. A change in size or shape is generally recognized as being within the level of ordinary skill in the art, absent unexpected results. MPEP 2144.04 (I) and (IV).

***Allowable Subject Matter***

7. Claims 55, 58, 70 and 73 are allowed.
8. Claims 52, 65-69, 71 and 76 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
9. Claims 55 and 58 are generic and allowable. Accordingly, the restriction requirement as to the encompassed species is hereby withdrawn and claims 85 and 88, directed to the species of titanium dioxide, anatase/amorphous structure, is no longer withdrawn from consideration since all of the claims to this species depend from or otherwise include each of the limitations of an allowed generic claim. However, claims 54, 57, 59, 60, 63, 64, 72, 74, 75, 78-84, 86-94 directed to the species as pointed out in the restriction requirement mailed May 7, 2002 remain withdrawn from consideration since they do not all depend upon or otherwise include all the limitations of an allowed generic claim as required by 37 CFR 1.141.

In view of the above noted withdrawal of the restriction requirement as to the linked species, applicant(s) are advised that if any claim(s) depending from or including all the limitations of the allowable generic linking claim(s) be presented in a continuation or divisional application, such claims may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 44 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

***REASONS FOR ALLOWANCE***

10. The following is an examiner's statement of reasons for allowance:

The closest prior art found is summarized above:

The prior art fails to teach or suggest the an opening on a surface of the member and through the photocatalytic layer, the space communicates with the opening in order to be open to the outside of the member and wherein the opening is circular, elliptical, or polygonal, claim 55, or an opening on a surface of the member and through the photocatalytic layer, the space communicates with the opening in order to be open to the outside of the member and wherein the support layers are disposed at a center of the spaces to support the catalytic layers and maintain the spaces and each support layer has a circular, elliptical, or polygonal cross section when viewed from the surface of the member, claim 58.

Furthermore, regarding claims 52, 65-69, 71 and 76 the prior art fails to teach of suggest a photocatalytic member as claimed in claim 50 where in the plurality of thin-film photocatalytic layers consist of titanium dioxide.

In summary, the prior art of record fails to teach or suggest the photocatalytic member having all the features of base claims 55 and 58.

11. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***ANSWERS TO APPLICANT'S ARGUMENTS***

12. Applicant's arguments in the response filed June 17, 2004 regarding the 35 U.S.C. 103 rejection previously of record have been considered but are moot since the rejections have been withdrawn.

***Conclusion***

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia Chevalier whose telephone number is (571) 272-1490. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571) 272-1498. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



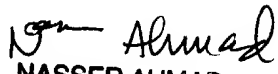
Art Unit: 1772

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ac

8/26/04



  
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